

We claim:

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1. A fuel supply apparatus for supplying fuel to an internal combustion engine,

2 said fuel supply apparatus comprising

3 at least one fuel valve (16) for introducing the fuel into the internal

4 combustion engine;

5 a fuel tank (2);

6 a fuel line (10) connected to the fuel tank (2);

7 a first fuel pump (6) for supplying the fuel from the fuel tank (2) to the fuel

8 line (10);

9 a second fuel pump (12) for supplying the fuel from the fuel line (10) via a

10 pressurized line (14,42,44) to said at least one fuel valve (16) so that the fuel is

11 introduced into the internal combustion engine at least indirectly;

12 a fuel return line (22) connecting the fuel line (10) to the fuel tank (2) for

13 fuel return;

14 a pressure regulator valve (26) arranged in the fuel return line (22);

15 a shut off valve (30) arranged in the fuel return line (22) hydraulically in

16 series with the pressure regulator valve (26); and

17 a fuel scavenger line (60) conducts the fuel back to the fuel tank (2)

18 partially through the second fuel pump (12) and partially through a hydraulic

19 resistance means (61, 62, 66, 70, 72, 76, 84).

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1 2. The fuel supply apparatus as defined in claim 1, further comprising means (20,

2 65) for controlling the shut off valve (30) according to a temperature.

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3. The fuel supply apparatus as defined in claim 1, wherein the second fuel pump
(12) has a pump housing (12g) and the fuel scavenger line (6) extends through
said pump housing (12g).

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4. The fuel supply apparatus as defined in claim 1, wherein the hydraulic
resistance means comprises another valve (61, 62, 66, 72) that opens depending
on a pressure.

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5. The fuel supply apparatus as defined in claim 1, wherein the hydraulic
resistance means comprises an additional valve (70, 76, 84) and said additional
valve has a flow-through resistance depending on the fluid flowing therethrough.

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6. The fuel supply apparatus as defined in claim 1, wherein the fuel scavenger
line (60) opens into the fuel return line (22) hydraulically between the shut off
valve (30) and the pressure regulator valve (26).

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7. The fuel supply apparatus as defined in claim 1, further comprising an
overpressure valve (7) connected in parallel hydraulically to the pressure
regulator valve (26).

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~~8. The fuel supply apparatus as defined in claim 1, further comprising a circulator~~

2 line (52,52') connecting the pressurized line (14, 42, 44) to the fuel line (10) via a
3 control valve (50,50').

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1 9. The fuel supply apparatus as defined in claim 8, wherein the circulator
2 line(52,52') is connected to the fuel line (10) by means of a hydraulic resistance
3 element (53,74,80).

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1 10. The fuel supply apparatus as defined in claim 8, wherein the circulator line
2 (52,52') is connected to the fuel line (10) by means of a check valve (53,80).

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1 11. The fuel supply apparatus as defined in claim 10, further comprising a throttle
2 (74) connected in parallel hydraulically to the check valve.

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1 12. The fuel supply apparatus as defined in claim 3, wherein the second fuel
2 pump (12) has a low pressure side (12n) and the fuel scavenger line (60) is
3 connected at a highest position thereof to said low pressure side (12n) of the fuel
4 scavenger line (60) and branches from the pump housing (12g).

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1 13. The fuel supply apparatus as defined in claim 8, wherein the second fuel
2 pump (12) has a compression chamber (12k) and the circulator line (52') extends
3 from the compression chamber (12k).

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1 14. The fuel supply apparatus as defined in claim 1, further comprising a leakage

